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PATENT APPLICATION

ATTORNEY DOCKET NO. 10017812-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Debendra Das Sharma

Confirmation No.: 5264

Application No.: 10/011,857

Examiner: Khang Dang

Filing Date: November 5, 2001

Group Art Unit: 2111

Title: Method and system for controlling flow of ordered, pipelined transactions between
intercommunicating electronic devices

Mail Stop Appeal Brief - Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF REPLY BRIEF

Transmitted herewith is the Reply Brief with respect to the Examiner's Answer mailed on July 25, 2007.

This Reply Brief is being filed pursuant to 37 CFR 1.193(b) within two months' of the date of the Examiner's Answer.

(Note: Extensions of time are not allowed under 37 CFR 1.136(a))

(Note: Failure to file a Reply Brief will result in dismissal of the Appeal as to the claims made subject to an expressly stated new ground rejection.)

No fee is required for filing of this Reply Brief.

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Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Applicant: Debendra Das Sharma
Application No.: 10/011,857
Filed: November 5, 2001
Title: Method and System for Controlling Flow of Ordered, Pipelined
Transactions between Intercommunicating Electronic Devices

Examiner: Khanh Dang

Art Unit: 2111

Docket No.: 10017812-1

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REPLY BRIEF UNDER 37 CFR 1.193(b)(1)

Mail Stop Board of Patent Appeals and interferences
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Supplemental Examiner's Answer dated July 25, 2007 and the Notification of Non-Compliant Appeal Brief dated August 23, 2007, Appellant replies as follows:

REAL PARTY IN INTEREST

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

RELATED APPEALS AND INTERFERENCES

Appellant's Representative has not identified, and does not know of, any other appeals of interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF AMENDMENTS

No Amendment After Final is enclosed with this brief. The last Amendment was filed August 4, 2004. Appellant's amendments in an Amendment After Final filed on September 21, 2005, were not considered and were not entered into the record by the Examiner.

SUMMARY OF CLAIMED SUBJECT MATTER

Overview

One embodiment of the present invention is directed to a method and system for guaranteeing in-order delivery of transaction requests (1010-1018 in Figure 10A) from a producing node, such as a bus bridge (106-107 in Figure 1) or other processing entity or other computer-system component, and a consuming node, such as a bus bridge (108 in Figure 1) or other processing entity or other computer-system component. In the producing node, outstanding transaction requests are maintained within a source input queue (1002 in Figure 10A), each transaction request associated with a retry bit. When a message is transmitted from the producing node to the consuming node, a special marker bit (1040 in Figure 10E) may be included to flag certain messages as special to the consuming node. The consuming node maintains a retry vector (1006 in Figure 10A) having a retry bit corresponding to each producing node. When the producing node receives a NAK reply (1036 in Figure 10C) from the consuming node rejecting a transaction request, the producing node sets the retry bit for the transaction request in the source input queue, as well as the retry bits for other pending, subsequently received transaction requests directed to the consuming node. The producing node then proceeds to retransmit the transaction request and any additional pending, subsequently received transaction requests to the consuming node. When the producing node transmits the oldest transaction request (1038 in Figure 10E) pending for a particular consuming node, the producing node sets the special marker bit within the transaction request

to flag the transaction request to the consuming node. When a consuming node receives a transaction request from the producing node, it first checks the retry vector to determine whether or not the retry vector bit corresponding to the producing node has been set. If so, then the consuming node responds with a NAK reply unless the special marker bit within the transaction request is set. If the special marker bit is set, and if the retransmitted transaction request can now be accommodated by the consuming node, the consuming node resets the bit within the retry vector corresponding to the producing node and replies with an ACK reply to the producing node. This technique guarantees that, once the consuming node rejects a transaction request within an ordered stream of transaction requests, the transaction request will be retransmitted by the producing node within a proper ordering of transaction requests.

Independent Claim 1

Claim 1 claims a method for controlling flow of requests and replies between a first electronic device, such as such as a bus bridge (106-107 in Figure 1), that stores new and pending requests in an electronic memory and retrieves new and pending requests from the electronic memory for transmission, as in a source input queue (1002 in Figure 10A), and a second electronic device, such as such as a bus bridge (106-107 in Figure 1), that accepts requests transmitted from the first electronic device, transmitting back to the first electronic device an ACK reply (1028 in Figure 10B), and rejects requests transmitted from the first electronic device, transmitting back to the first electronic device a NAK reply (1036 in Figure 10C) (see current application, page 1, lines 14-25). The method of claim 1 includes steps of: (1) storing by the first electronic device a retry bit associated with each stored request (*see* retry bits in entries in the source input queue, 1002 in Figures 10A-H; current application, page 9, lines 29-30); (2) storing by the second electronic device a retry vector (1006 in Figure 10A; current application, page 10, lines 2-3) containing bits corresponding to a first set of electronic devices from which the second electronic device receives requests; (3) maintaining a copy in storage, such as in source input queue (1002 in Figure 10A), by the first electronic device, of each request until an ACK reply corresponding to the request is received by the second electronic device; (4) employing the retry bits associated with each stored request by the first electronic device to mark requests for retransmission (*see* retry bits set to "1" in Figure 10D; current application, page 10, lines 3-6); and (5) employing the retry vector by the second electronic device to mark a second set of electronic devices that need to retransmit

one or more rejected requests (*see* retry bit marked "1" in retry vector 1006 Figure 10D; current application, page20, lines 21-23).

Dependent Claims 2 – 14

Claim 2 is directed to actions taken by the first electronic device upon receiving a NAK reply from the second electronic device. Claim 3 is directed to actions taken by the second electronic device upon receiving a request from the first electronic device: Claim 4 is directed to storing, by the first electronic device, new and pending requests in a source input queue. Claim 5 is directed to a system in which the first electronic device is a source node and the second electronic device is a destination node. Claim 6 is directed to a method practiced in a system in which the first electronic device is a producing node and the second electronic device is a destination node. Claim 7 is directed to a method practiced in a computer system in which the first electronic device is a producing node and the second electronic device is a consuming node. Claim 8 is directed to a method practiced in a computer system in which the first electronic device is a source node and the second electronic device is a consuming node. Claim 9 is directed to a method practiced in a computer system in which the first electronic device is directly connected to the second electronic device by an electronic communications medium. Claim 10 is directed to a method practiced in a computer system in which the first electronic device is indirectly connected to the second electronic device by a first electronic communications medium, a forwarding node, and a second electronic communications medium, the first electronic communications connected to the first electronic device and the forwarding node, and the second electronic communications medium connected to the forwarding node and the second electronic device. Claim 11 is directed to a method practiced in a computer system in which the first electronic device is indirectly connected to the second electronic device by a number of electronic communications media and forwarding nodes. Claim 12 is directed to a method practiced in a computer system in which the first electronic device and second electronic device are bus interconnect components within a computer system. Claim 13 is directed to a method practiced in a system in which each bit of the retry vector corresponds to an electronic device, directly connected to the second electronic device, which can send requests to the second electronic device. Claim 14 is directed to a method practiced in a system in which each bit of the retry vector corresponds to a unique set of electronic devices that originate and forward requests to the second electronic device.

Independent Claim 15

Claim 15 is directed to a system containing two intercommunicating electronic devices, such as a bus bridges (106-107 in Figure 1), comprising: (1) a first electronic device that stores new and pending requests in an electronic memory and retrieves new and pending requests from the electronic memory for transmission (current application, page 1, lines 15-17), such as source input queue (1002 in Figure 10A); (2) a retry bit associated with each stored request within the first electronic device (*see* retry bits in entries in the source input queue, 1002 in Figures 10A-H; current application, page 9, lines 29-30); (3) a second electronic device that accepts requests transmitted from the first electronic device (current application, page 1, lines 16-19), transmitting back to the first electronic device an ACK reply (current application, page 20, lines 5-8), and rejects requests transmitted from the first electronic device, transmitting back to the first electronic device a NAK reply (current application, page 20, lines 17-21); and (4) a retry vector (1006 in Figure 10A) maintained by the second electronic device (current application, page 10, lines 2-3) containing retry vector bits corresponding to a set of electronic devices from which the second electronic device receives requests that need to retransmit one or more rejected requests.

Dependent Claims 16 – 20

Claim 16 is directed to a system that, when a request corresponding to a NAK reply is the oldest pending request directed to the second electronic device, sets the retry bits associated with all subsequent requests directed to the second electronic device. Claim 17 is directed to a system that, when a request corresponding to the NAK reply is not the oldest pending request directed to the second electronic device, retransmits the request to the second electronic device without a special marker bit. Claim 18 is directed to a system in which control logic within the second electronic device that receives a request from the first electronic device and, when the retry vector bit corresponding to the first electronic device is set and when no special marker bit is set in the request, sends a NAK reply back to the first electronic device. Claim 19 is directed to a system that, when the retry vector bit corresponding to the first electronic device is not set or a special marker bit is set in a received request, the control logic determines if the request can be processed by the second electronic device and when the request can be processed by the second electronic device, resets the retry vector bit corresponding to the first electronic device and sends an ACK reply

back to the first electronic device. Claim 20 is directed to a system that, when the request cannot be processed by the second electronic device, sets the retry vector bit corresponding to the first electronic device and sends a NAK reply back to the first electronic device.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1 and 4-15 are anticipated by Uechara et al., U2002/0040414 A1 ("Uechara") under 35 U.S.C. § 102(e).
2. Whether claims 1-20 are indefinite under 35 USC § 112, second paragraph.

ARGUMENT

Claims 1-20 are currently pending in the application. In an office action dated July 21, 2005 ("Final Office Action"), the Examiner rejected claims 1-20 under 35 USC § 112, second paragraph, as being indefinite, rejected claims 1 and 4-15 under 35 U.S.C. § 102(e) as being anticipated by Uechara et al., U2002/0040414 A1 ("Uechara"), and conditionally allowed claims 2, 3, and 16-20. Appellant filed an appeal brief on January 23, 2006 ("Appeal Brief") in which Appellant respectfully traverses the 35 USC § 112, second paragraph rejection of claims 1-20 and the 35 U.S.C. § 102(e) rejections of claims 1 and 4-15. The Examiner issued an Examiner's answer to the appeal brief on March 24th, 2006 ("Examiner's Answer"), in which the Examiner apparently included new grounds of rejection with respect to Issue 1, identified above, and maintained the 35 USC § 112, second paragraph rejections in the Office Action. Appellant respectfully traversed the new grounds of rejection with respect to Issue 1 and the Examiner's continued rejections of claims 1-20 under 35 USC § 112, second paragraph, in a reply brief filed May 24, 2006 ("Reply Brief").

In an Office Communication, dated August 23, 2007, the Patent Appeal Center Specialist indicated that the Appeal Brief, originally submitted on January 23, 2006, did not include references to the specification in the descriptions of independent claims 1 and 15. Applicant's representative has added such references to the descriptions of claims 1 and 15, above. Applicant's representative additionally includes these two, amended descriptions on a separate page. The Examiner has issued a supplemental reply brief, dated July 25, 2007 ("Supplemental Reply Brief"). The following remarks represent Applicant's response to the Supplemental Reply Brief.

ISSUE 1**1. Whether claims 1 and 4-15 are anticipated by Uechara under 35 U.S.C. § 102(e).**

In the Supplemental Reply Brief, the Examiner has apparently quoted portions of statements made by Appellant's representative and portions of the MPEP, and interspersed, between the apparently quoted statements, numerous bolded, sporadically capitalized, and underlined statements that, in many cases, do not appear to have a clear purpose or connection to the quoted statements and that are, in some cases, difficult to parse. Appellant's representative endeavors to respond as best as he can, in view of the rather disorganized text in the Supplemental Reply Brief.

First, again, please consider the prosecution history of the current application related to Appellant's attempt to swear behind Uechara under 37 C.F.R. § 1.131. In the First Office Action, the Examiner rejected claims 1 and 4-15 under 35 U.S.C. § 102(e) as being anticipated by Uechara. In a response filed August 4, 2004 ("First Response"), Appellant's representative submitted a 37 CFR § 1.131 Declaration in which Appellant declared that he had conceived the claimed invention prior to the July 3, 2001 effective date of the cited reference. The next office action issued by the Examiner was the Final Office Action, in which the Examiner stated:

In response to Applicants' argument, the declaration under 36 CFR 1.131 filed 8/10/2004 is insufficient to overcome the rejection of claims 1, 4-15 over Uechara under 35 USC § 102(e) as set forth in the last Office action because it is not properly executed and fails to establish reduction to practice prior to the date of the reference. ... In the affidavit Applicants state that the invention was reduced to practice. However, a written description does not constitute an actual reduction to practice. Furthermore, only the filing of a US patent application which complies with the disclosure requirement of 35 U.S.C. § 112 constitutes a constructive reduction to practice. A written description, no matter how complete, which has not been made the subject of a US patent application does not qualify as reduction to practice. In any event, it is Applicants' acknowledgement that the invention is not built or tested ...

The Examiner did not indicate why the previously submitted Rule 131 Declaration is not properly executed. It is complete, and is signed and dated by Appellant. The Rule 131 Declaration is directed to the conception of the invention by Appellant prior to the date of the

cited reference and diligence in pursuing a constructive reduction to practice. Filing of the Current Application constitutes a constructive reduction to practice. As stated in 37 C.F.R. § 1.131(b):

The showing of facts shall be such, in character and weight, as to establish reduction to practice prior to the effective date of the reference, or conception of the invention prior to the effective date of the reference coupled with due diligence from prior to said date to a subsequent reduction to practice or to the filing of the application.

In a response after final, filed September 21, 2005 ("Response After Final"), Appellant's representative endeavored to assist the Examiner in properly considering the previously filed Rule 131 Declaration. In the Response After Final, Appellant's representative pointed out to the Examiner that the previously filed Rule 131 Declaration establishes conception of the invention prior to the effective date of the reference coupled with due diligence from the prior effective date, and, in addition, submitted a newly executed Rule 131 Declaration intended to correct any deficiencies in the originally submitted Rule 131 Declaration, even though the deficiencies were not pointed out clearly by the Examiner, and Appellant's representative did not understand why the previously submitted Rule 131 Declaration was improperly executed or in any way defective. In an Advisory Action dated October 11, 2005, the Examiner apparently maintained the rejections of claims 1 and 4-15, refused to enter the newly filed Rule 131 Declaration, and did not address Appellant's representative's arguments concerning the original Rule 131 Declaration and the second Rule 131 Declaration or explain the Examiner's position.

Finally, in the Examiner's Answer, the Examiner recognized that the submitted Rule 131 affidavit is intended to show "conception of the invention prior to the effective date of the reference coupled with due diligence from prior to said date to a subsequent reduction to practice or to the filing of the application." The Examiner listed various criteria used to establish conception, and then concluded that the evidence provided with the originally filed Rule 131 Declaration is insufficient to support Appellant's assertion of prior conception and due diligence. Appellant disagrees. Appellant's arguments are contained in the Reply Brief, and are not repeated in this document, in the interest of brevity.

In the Supplemental Reply Brief, the Examiner states:

According to MPEP 715.07(III), in order to establish conception:

The affidavit or declaration must state FACTS and produce such documentary evidence and exhibits in support thereof as are available to show conception and completion of invention in this country or in a NAFTA or WTO member country (

MPEP § 715.07(c)), at least the conception being at a date prior to the effective data of the reference. However, the evidence submitted by Appellants' affidavit is insufficient to establish a conception of the invention prior to the effective data of the Uechara reference. While conception is the mental part of the inventive act, it must be capable of proof, such as by demonstrative evidence or by a complete disclosure to another. Conception is more than a vague idea of how to solve a problem. The requisite means themselves and their interaction must also be comprehended. See *Mergenthaler v. Scudder*, 1987 C.D. 724, 81 O.G. 1417 (D.C. Cir. 1897).

Throughout the Supplemental Reply Brief, as in the above-quoted passage, the Examiner freely mixes direct quotes and the Examiner's opinions. The Examiner appears to have scanned through the MPEP to select convenient passages, while ignoring others. For example, MPEP § 715.02 includes lengthy discussion of how much of a claimed invention must be shown by evidence submitted with a Rule 131 Declaration, clearly stating that evidence provided needs to show possession of the inventive concept, and not necessarily identically recite the contents of the specification or claims of an application subsequently filed, contrary to the Examiner's apparent belief that evidence of conception requires the exact claim language that appears in a subsequently filed application to be found in the evidence. Please note also that even the quoted portion of MPEP 715.07(III) states "The affidavit or declaration must state FACTS and produce such documentary evidence and exhibits in support thereof as are available to show conception and completion of invention in this country" (emphasis added). Appellant has provided the available evidence as Exhibit I that accompanied the originally filed Rule 131 Declaration. In the Reply Brief, Appellant's representative stated:

In the originally submitted Rule 131 affidavit, Appellant stated that Appellant provides an Invention Disclosure. Exhibit 1 included with the Rule 131 Declaration is, in fact, the invention disclosure form prepared by Appellant and submitted to the Hewlett-Packard Corporation Legal Department, and is the Invention Disclosure used by Appellant's representative to prepare the current patent application.

Appellant's representative again emphasizes that the entire and complete invention disclosure used by Appellant's representative to draft the current application is included as Exhibit 1 in the originally filed Rule 131 Declaration. In the above, paraphrased reference to *Mergenthaler v. Scudder*, the Examiner states: "While conception is the mental part of the inventive act, it must be capable of proof, such as by demonstrative evidence or by a complete disclosure to another." A complete disclosure to another is exactly what has been included in Exhibit 1 of the Rule 131 Declaration. The member of the Hewlett-Packard legal

department who received the disclosure document and decided to pursue patenting of the disclosed invention is the "another," and the invention disclosure is complete.

The Examiner further cites MPEP 715.07, listing various types of documents that allegations of fact in a Rule 131 affidavit "might be supported by," annotating the description of each type of document by the bolded text "[None is provided by Appellants] [sic]." The Examiner further states:

Further, 37 CFR 1.131(b) requires that original exhibits or drawings or records, or photocopies thereof, accompany and form part of the affidavit or declaration or their absence satisfactorily explained. *Ex parte Donovan*, 1980 C.D. 109, 52 O.G. 303 (Comm'r Pat. 1890).

It is clear from the record that no satisfactorily [sic] explanation to [sic] the absence of facts and documentary evidence is provided by Appellants [sic].

Apparently, the Examiner implies that the document types included in the list of document types provided in MPEP 715.07 are required. They are not, and MPEP 715.07 clearly states that they are merely types of support that *might* be furnished. No explanation for not including these suggested types of support documents is required by 37 CFR 1.131(b). *The Rule 131 Declaration was supported by documentary evidence - namely - the entire and complete disclosure used by Appellant's representative to draft the current application.*

The Examiner then states:

Further, to support "conception," Appellants [sic] only provide a one-page exhibit with only half page [sic] is directed to "Description of the construction and operation of the invention."

MPEP 715.07 states that "[h]owever, when reviewing a 37 CFR 1.131 affidavit or declaration, the examiner must consider all of the evidence presented in its entirety, including the affidavits or declarations and all accompanying exhibits, records and "notes." An accompanying exhibit need not support all claim limitations, provided that any missing limitation is supported by the declaration itself. *Ex parte Ovshinsky*, 10 USPQ2d 1075 (Bd. Pat. App. & Inter. 1989).

In any event, the exhibit does NOT support all claimed [sic] limitations, and the missing limitations are NOT supported by the declaration itself. The limitations in claim 1 that are NOT supported by the 8/10/2004 exhibit are:

The Examiner then proceeds to quote claim 1 nearly in its entirety, with annotations in brackets. Appellant's representative has no idea to what, in the quoted portion of claim 1, the Examiner is referring to as not being supported by the disclosure. Moreover, as Appellant's representative has clearly and repeatedly stated, *the disclosure included as Exhibit I in the originally filed Rule 131 affidavit is the entire and complete disclosure of the current invention that was used by Appellant's representative to draft the current application.* Anything not included in that disclosure was furnished by Appellant's representative's

knowledge of computer hardware and software and descriptions of typical hardware systems available on the Internet and in textbooks. As stated in MPEP § 715.02:

Even if applicant's 37 CFR 1.131 affidavit is not fully commensurate with the rejected claim, the applicant can still overcome the rejection by showing that the differences between the claimed invention and the showing under 37 CFR 1.131 would have been obvious to one of ordinary skill in the art, in view of applicant's 37 CFR 1.131 evidence, prior to the effective date of the reference(s) or the activity.

Appellant's representative worked as a software engineer for 12 years, between finishing graduate school and finishing law school, in operating-systems development and other areas, but not in hardware design. Appellant's representative is probably less than ordinarily skilled in the art. However, anyone conversant with computer science, cursorily familiar with hardware design, and having the ability to access online information through the Internet and printed information resources, including textbooks, could understand the disclosed invention and complete a description equivalent to that of the current application using the invention disclosure provided by Appellant and included in Exhibit I. A more detailed summary of that disclosure is included in the Reply Brief.

Appellant's representative again points out that, until preparing the Examiner's Answer, the Examiner clearly did not understand why the Rule 131 Declaration was originally filed, did not offer any explanation for rejecting the originally filed Declaration as being improperly executed, and provided Appellant's representative with no valid explanations for rejecting the Declaration or any suggestions as to how to satisfy the Examiner's rejection of the Rule 131 Declaration. Appellant's representative cannot see any valid reason for rejecting the Rule 131 Declaration. But, in Appellant's representative's respectfully offered opinion, even had a valid reason or reasons for rejecting the Rule 131 Declaration been found, the reason or reasons should have been offered *during prosecution*, at a time when Appellant could have responded to them. A final rejection prior to providing a clear explanation and justification for the final rejection is, in Appellant's representative's respectfully offered opinion, clear error. Even now, late in the appeal process, in the Supplemental Reply Brief, the Examiner continues to appear to not understand that a full disclosure of the invention was provided as Exhibit I that accompanied the originally filed Rule 131 Declaration, fails to appreciate that the disclosure need not include exact claim language recited in the subsequently filed application, fails to appreciate that the document types listed in MPEP 715.07 are not required to be supplied as evidence to support a Rule 131 Declaration, and fails to understand that the disclosure provided in Exhibit I cannot simply

be rejected based on its length, but instead must be evaluated with respect to what it discloses, in view of the level of knowledge of one ordinarily skilled in the art and the extensive information available in textbooks and online at the time that the disclosure was furnished to the Hewlett-Packard legal department. In short, in Appellant's representative's respectfully offered opinion, the Examiner has yet to provide any reason, compatible with statute, case law, or rule, for rejecting the originally Rule 131 Declaration.

ISSUE 2

2. Whether claims 1-20 are indefinite under 35 USC § 112, second paragraph.

The 35 U.S.C. §112, second paragraph rejections of claims 1-20 are detailed in the Appeal Brief, and Appellant's arguments and observations with respect to the 35 U.S.C. §112, second paragraph in the Appeal Brief remain reflective of Appellant's position. In the Reply Brief, filed on May 24, 2006, Appellant's representative further clarified Appellant's position with respect to the 35 USC § 112, second paragraph rejections. Appellant responds, below, to certain of the Examiner's arguments under Issue 2 in the Supplemental Reply Brief.

With regard to the 35 U.S.C. §112, second paragraph rejection of claim 1, Appellant's representative believes that the Examiner has stated no new position or argument. There is no formal lack of antecedent basis for "first set of electronic devices" and "second set of electronic devices." Both phrases are initially introduced with the article "a."

There is no antecedent problem with respect to the claim language. The "first set of electronic devices" is introduced, in claim 1, by the following phrase: "a first set of electronic devices from which the second electronic device receives requests." In the preamble of claim 1, "the second electronic device" is described by the phrase: "a second electronic device that accepts requests transmitted from the first electronic device." Since the second electronic device accepts requests transmitted from the first electronic device, the first electronic device is necessarily one of the "first set of electronic devices." Similarly, the "second set of electronic devices" is introduced, in claim 1, by the following phrase: "employing the retry vector by the second electronic device to mark a second set of electronic devices that need to retransmit one or more rejected requests." In the preamble of claim 1, "the first electronic device" is described by the phrase: "a first electronic device that stores new and pending requests in an electronic memory and retrieves new and pending requests from the electronic memory for transmission, and a second electronic ... rejects requests

transmitted from the first electronic device, transmitting back to the first electronic device a NAK reply," the first electronic device "employing the retry bits associated with each stored request by the first electronic device to mark requests for retransmission." Since the first electronic device may retransmit requests to the second electronic device, the first electronic device necessarily may be, at any given time, one of the "second set of electronic devices." However, the claimed method is carried out in a dynamic, ever changing environment. Should the first electronic device not need to retransmit a request, at a given point in time, then, at that time, it is not one of the "second set of electronic devices." Appellant's representative can see no other logical interpretation of the claim language. The "first electronic device" and the "first set of electronic devices" refer to a particular electronic device and a particular set of one or more electronic devices, respectively. Those familiar with elementary mathematics well understand that a set is different from an element of a set. The first electronic device of claim 1 is necessarily a member of the "first set of electronic devices," as discussed above, and may be a member of the "second set of electronic devices" at a given point in time. The second electronic device is not mentioned, in claim 1, as transmitting requests, and is therefore not a member of either the "first set of electronic devices" or the "second set of electronic devices." There is simply no ambiguity or lack of clarity with respect to the first electronic device, the second electronic device, the first set of electronic devices, or the second set of electronic devices in claim 1.

The many detailed examples, illustrated in great detail, in the current application, including the example illustrated in Figures 10A-H, clearly describe the environment in which the currently claimed invention operates and operation of all of the elements of the currently claimed invention. For example, in Figure 1, an input-output bus bridge 108 communicates with multiple north bridge devices 106 and 107 and with multiple south bridge components 110-115. Each pair of dissimilar communicating devices, such as a southbridge device and the input-output bus bridge, may potentially constitute the first and second electronic devices of claim 1, but each electronic device of each pair of electronic devices may communicate with a set of electronic devices, as clearly does, for example, the input-output bus bridge 108. That is why a retry vector, rather than a retry bit, is used by the second electronic device in claim 1.

On page 1 of the current application, "node" terminology is explained as follows:

The present invention is concerned with flow control of ordered, pipelined transactions between a first electronic device, referred to as a "producing node," that transmits the ordered, pipelined transactions, and a second electronic device, referred to as a "consuming node," that receives the ordered, pipelined transactions, both the producing and consuming nodes operating within a system of intercommunicating electronic components. *Electronic devices are referred to as "nodes" because, when a system of interconnected electronic devices is viewed abstractly as a graph, the electronic devices can be viewed as vertices or nodes interconnected by edges comprising communications media such as busses and signal lines.* The present invention provides a relatively straightforward method for flow control that can be implemented in logic circuits within an electronic device such as a bus-bridge device or routing device within a computer system. (emphasis added)

This is not a particularly difficult concept, but is a fundamental concept in computer science and hardware design. Graphs comprise a set of nodes interconnected by edges, in the present case, electronic devices interconnected by communications media, such as busses and signal lines. Two nodes are directly connected when connected through a single electronic communications medium. Two nodes are not directly connected when the shortest path between them in a graph includes n other nodes, where $n \geq 1$, and includes $n + 1$ communications media. On page 22 of the current application, Appellant states: "For example, the producing node and consuming node may be directly interconnected, as an example of Figure 5, or may be indirectly interconnected through additional nodes." Claim 9 states the first case, and claim 11 states the second case. There is nothing missing from either claim. The Examiner has failed to appreciate that claims are interpreted in light of the specification, and in light of what claim terms mean to those skilled in the art. No one familiar with electronic communications, graph theory, or basic computer science would interpret claims 9 and 11 as standing for anything other than the fact that the producing nodes may be directly connected through a single communications medium or indirectly connected through n other nodes, where $n \geq 1$, and through $n + 1$ communications media. The word "directly" needs to be interpreted in the context of electronic communications, rather than in the context of a simple mechanical device in which parts are affixed to one another.

With regard to claims 11 and 15, Appellant has explained, multiple times, that Appellant cannot possibly specifically claim the different possible physical links and nodes that might interconnect a producing and consuming node. For even a small device, such as that shown in Figure 1, there are 930 different possible consumer-node/producer-node pairs ($31 * 30$), many of which pairs involve intermediate nodes and intermediate links. To specifically claim all such possibilities would require a claim that would likely span 5 or 10

pages. For practical, large-scale computer systems, there may be hundreds of thousands or millions of different possible consumer-node/producer-node pairs, with hundreds of thousands or millions of different multi-node paths connecting them. Moreover, interconnection may be dynamic. Electronic devices may communicate with one another for a period of time, and then discontinue communicating with one another, or may initially not communicate with one another, but may subsequently begin communicating. Interconnection paths may also be dynamic. Routing of communications messages may dynamically choose optimal paths, depending on load, the operational states of nodes, and on other characteristics. The Examiner is demanding a completely unfeasible approach to claim drafting. The relationship between the first and second electronic devices in claim 15 is quite clearly and transparently claimed. The two devices intercommunicate. The exact physical path that interconnects them is entirely immaterial to what is being claimed, and is practically impossible to specify, in a claim of reasonable length, for possible pairs of consumer nodes and producer nodes even in a small system such as that shown in Figure 1. As an example, many system-style claims are directed to systems that include a client computer interconnected with a server computer via the Internet. The exact, physical interconnection between the server and client computers is not specified in the claims, and need not be. In fact, in general, it cannot be. Even developers of such systems cannot possibly predict through which physical links and intermediate nodes messages from the server will pass in order to reach the client computer, and vice versa, and, in general, cannot even begin to enumerate the possible routes such messages can take. In many cases, messages may be transmitted by wireless means in which there is no physical link, other than space. The functional relationship, however, is quite clear. The server computer and the client computer communicate with one another. Furthermore, no particular communication path between nodes is necessarily essential to practicing the currently claimed invention. Nodes may be interconnected by multiple communications paths, or the type of communication path employed may be a design decision from among many different possible types of communication paths. The fact that the two electronic devices of claim 15 intercommunicate clearly states everything that is essential for practicing the invention. Exactly how they intercommunicate is entirely irrelevant. The first electronic device transmits requests to the second electronic device, and the second electronic device transmits ACK and NAK replies to the first electronic device. Whether the requests and replies are transmitted by radio-frequency through space, through a single serial link, over a single parallel bus, through a

pathway of individual links and store-and-forward nodes, through a token-ring optical fiber, or by any other means is entirely irrelevant.

The Examiner repeatedly requests, on pages 16-18 of the Supplemental Reply Brief, that Appellant provide various kinds of evidence and demands that Appellant make various statements for the record, without citation to rule or case law that would require Appellants to do so. Furthermore, we are now at a quite late stage of the appeal process. The Examiner should realize that Appellant cannot supply new evidence, at this point. Claim language disputes should, in Appellant's representative's respectfully offered opinion, be handled in prosecution, not in Supplemental Reply Briefs. The Examiner initially made a large number of 35 U.S.C. § 112 rejections in the First Office Action. In a first response, Appellant amended certain of the claims to address certain of those rejections, and attempted to explain claim language that the Examiner appeared not to understand. The next office action issued by the Examiner was the Final Office Action, in which the Examiner apparently accepted some of Appellant's arguments and/or amendments with respect to certain 35 U.S.C. § 112 rejections, and maintained certain other of the 35 U.S.C. § 112 rejections. In a response after final, filed September 21, 2005, Appellant attempted to further amend the claims, in order to further prosecution, even though not agreeing with the Examiner's rejections. In Appellant's representative's opinion, it may be far more efficient to make relatively minor, claim-scope-neutral amendments than to needlessly belabor claim-language disputes. However, the Examiner did not enter the amendment, stating that the proposed amendments had changed the scope of the claims. In Appellant's respectfully offered opinion, the proposed amendments were either entirely neutral, with respect to scope, or actually narrowing. The amendments were made simply to address, using different names for entities mentioned in the claim language, the very objections that the Examiner had made in the First Office Action and maintained in the Final Office Action. Thus, the Examiner appears to feel that, should an applicant not successfully guess at claim language acceptable to the Examiner in a first response, then claims should be rejected, without further consideration. In the Supplemental Reply Brief, the Examiner states, in bolded text:

At the outset, it is noted that Appellants [sic] submitted an amendment to the claims that are rejected under 35 U.S.C. § 112, 2nd paragraph in the After-Final Amendment filed 9/26/2005. The After-Final Amendment filed 9/26/2005 was NOT entered. Without the After-Final proposed amendment, Appellants [sic] continue arguing with the Examiner regarding the 35 U.S.C. § 112, 2nd paragraph issue.

The Examiner seems almost incensed that Appellant would continue to assert the right to

fairly claim his invention after the Examiner rejected the claims and refused to enter modest amendments that might have furthered prosecution. Indeed, Appellant does continue to argue, in the Appeal Brief, the Reply Brief, and in this Supplemental Reply Brief. The Examiners rejections do not make sense, in light of the careful description in the specification of the current application, and in light of what anyone, with even cursory familiarity with computer science, would understand the claim language to mean.

CONCLUSION

In Appellant's representative's opinion, the Examiner failed to provide any valid reason for rejecting Appellant's Rule 131 Declaration during prosecution, and has failed to provide a valid reason for rejecting the Rule 131 Declaration up through the recently issued Supplemental Reply Brief. Appellant was clearly in possession of the currently claimed invention prior to filing of the Uechara application. The entire invention disclosure used by Appellant's representative in preparing the current application was provided as Exhibit 1 of the Rule 131 Declaration. Moreover, the invention disclosure completely described the essence of the currently claimed invention, with most claim limitations explicitly stated, and certain of the claim limitations implicit in the context of the invention disclosure provided by Appellant. With regard to the Examiner's 35 U.S.C. §112, second paragraph rejections, Appellant's representative believes that the current invention is clearly, distinctly, and correctly claimed by the current claims, which are fully supported by the current specification.

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Independent Claim 1

Claim 1 claims a method for controlling flow of requests and replies between a first electronic device, such as such as a bus bridge (106-107 in Figure 1), that stores new and pending requests in an electronic memory and retrieves new and pending requests from the electronic memory for transmission, as in a source input queue (1002 in Figure 10A), and a second electronic device, such as such as a bus bridge (106-107 in Figure 1), that accepts requests transmitted from the first electronic device, transmitting back to the first electronic device an ACK reply (1028 in Figure 10B), and rejects requests transmitted from the first electronic device, transmitting back to the first electronic device a NAK reply (1036 in Figure 10C) (see current application, page 1, lines 14-25). The method of claim 1 includes steps of: (1) storing by the first electronic device a retry bit associated with each stored request (*see* retry bits in entries in the source input queue, 1002 in Figures 10A-H; current application, page 9, lines 29-30); (2) storing by the second electronic device a retry vector (1006 in Figure 10A; current application, page 10, lines 2-3) containing bits corresponding to a first set of electronic devices from which the second electronic device receives requests; (3) maintaining a copy in storage, such as in source input queue (1002 in Figure 10A), by the first electronic device, of each request until an ACK reply corresponding to the request is received by the second electronic device; (4) employing the retry bits associated with each stored request by the first electronic device to mark requests for retransmission (*see* retry bits set to "1" in Figure 10D; current application, page 10, lines 3-6); and (5) employing the retry vector by the second electronic device to mark a second set of electronic devices that need to retransmit one or more rejected requests (*see* retry bit marked "1" in retry vector 1006 Figure 10D; current application, page 20, lines 21-23).

Independent Claim 15

Claim 15 is directed to a system containing two intercommunicating electronic devices, such as a bus bridges (106-107 in Figure 1), comprising: (1) a first electronic device that stores new and pending requests in an electronic memory and retrieves new and pending requests from the electronic memory for transmission (current application, page 1, lines 15-17), such as source input queue (1002 in Figure 10A); (2) a retry bit associated with each stored request within the first electronic device (*see* retry bits in entries in the source input queue, 1002 in Figures 10A-H; current application, page 9, lines 29-30); (3) a second electronic device that accepts requests transmitted from the first electronic device (current

application, page 1, lines 16-19), transmitting back to the first electronic device an ACK reply (current application, page 20, lines 5-8), and rejects requests transmitted from the first electronic device, transmitting back to the first electronic device a NAK reply (current application, page 20, lines 17-21); and (4) a retry vector (1006 in Figure 10A) maintained by the second electronic device (current application, page 10, lines 2-3) containing retry vector bits corresponding to a set of electronic devices from which the second electronic device receives requests that need to retransmit one or more rejected requests